

6/103 Determine the maximum horizontal force P which may be applied to the cart of mass M for which the wheel will not slip as it begins to roll on the cart. The wheel has mass m , rolling radius r , and radius of gyration \bar{k} . The coefficients of static and kinetic friction between the wheel and the cart are μ_s and μ_k , respectively.

$$\text{Ans. } P = \mu_s g \left[m + M \left(1 + \frac{r^2}{\bar{k}^2} \right) \right]$$

